Torocheshnikov, N.S.

TOROCHESHNIKOV, N.S.

Some problems in improving the higher technological education. Soob.o nauch.rab.chl.VKHO no.4:24-30 '53. (MIRA 10:10)

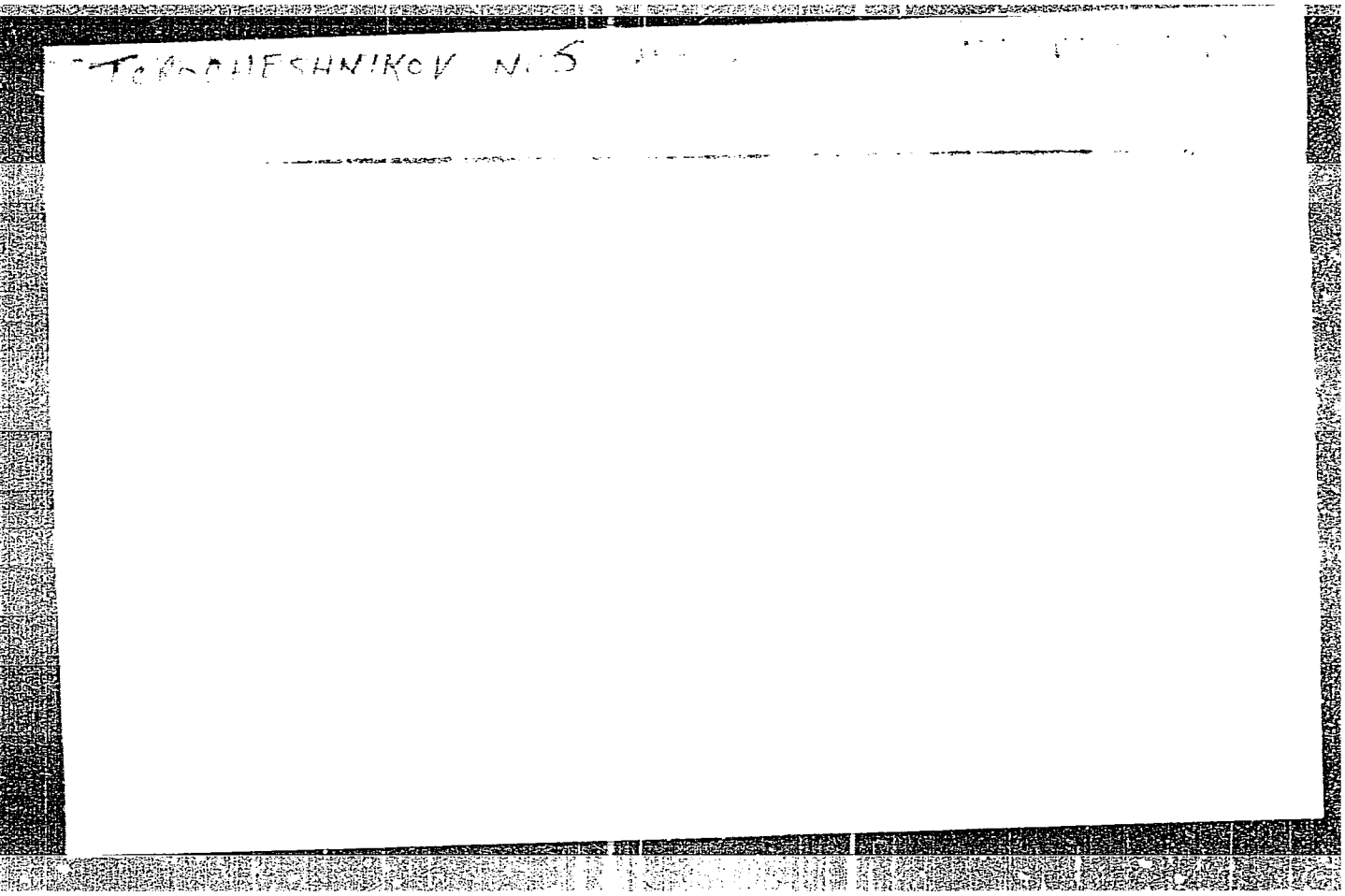
1. Ispolnyayushchiy obyazannosti nachal'nika Upravleniya tekhnologicheskikh vuzov Ministerstva kul'tury SSSR.
(Technical education)

TOROCHESHNIKOV, N.S., kandidat tekhnicheskikh nauk.

Improving the preparation of specialists in chemical engineering. Khim.nauka i prom. 1 no.6:706-710 '56. (MLRA 10:3)
(Chemistry -Study and teaching)

TOROCHESHNIKOV, N.S.; BRODYANSKIY, V.M.; PORTNOY, R.I.; ZAKHAROV, V.G.

Copper in the elimination of oxygen from a mixture containing inert gases. Khim.prom.no.4:224-230 Je '56. (MLRA 9:10)
(Copper) (Oxygen) (Gases, Rare)



TOROCHESHNIKOV, N.S.

3-12-17/27

AUTHOR: Lebedev, I.I.

TITLE: The Scientific-Methodical Conference on Automation and Telemechanization (Nauchno-metodicheskaya konferentsiya po avtomatizatsii i telemekhanizatsii)

PERIODICAL: Vestnik Vysshey Shkoly, 1957, # 12, pp 77 - 79 (USSR)

ABSTRACT: Analyses of present training conditions in the fields of automation and telemechanization of technological processes revealed that the educational programs of these special disciplines do not provide the engineers with sufficient knowledge in the field of technology dealing with the production of automatic, telemechanical and measuring devices.

A scientific methodical conference was convened in June 1957 by the USSR Ministry of Higher Education. Present were vuz professors and teachers and leading workers of specialized enterprises. The plenary sessions dealt with the following reports: P.D. Lebedev on the conditions of engineering training in the fields of automation, telemechanization, measuring technics and calculatio. devices. N.S. Torocheshnikov on engineering training in the automation and telemechanization of chemical production.

Three directions are distinguished in the training of en-

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The Scientific-Methodical Conference on Automation and Telemechanization

gineers in these fields. The first direction provides that every engineer must possess definite knowledge of the automation and telemechanization of his specialty. The second direction includes the training of engineer technologists in the following specialties: "Electric plants, networks and systems", Thermo-electric installations of electric plants", "Metallurgical equipment of ferrous and nonferrous metallurgy". The third direction comprizes the training of electrical engineers in computation, construction and exploitation of elements, devices and schemes and the automatic and telemechanical control of the technological processes. The Conference decided to include disciplines for the control of industrial automation and telemechanization in all training programs of power engineering, machine building, technology, etc. Great attention was paid to the training of engineers specialized in the automation and telemechanization of the power plants, metallurgical, chemical and oil industries.

A.M. Damskiy, Director of a factory for electric measuring devices, recommended to create a new special section training mechanical engineers for the designing and technology of automatic, telemechanical and measuring apparatus. For the expansion of these disciplines chairs of instrument designing must be organized.

AVAILABLE: Library of Congress

Card 2/2

SIN-BEN-DON [Hsing Pêng-tong]; TOROCHESHNIKOV, N.S.

Production of calcium carbonate - ammonium nitrate granules by means of centrifugal atomizers. Trudy MKHTI no.24:405-412 '57. (MIRA 11:6)
(Calcium carbonate) (Ammonium nitrate)

SOV/156-58-1-1/46

AUTHOR: Torocheshnikov, N. S., Nachal'nik Glavnogo upravleniya tekhnologicheskikh vuzov (Head of the Main Administration of Technical Universities: VUZ=vysshaye uchebnoye zavedeniye = University)

TITLE: The Issue of Great Years (Itogi velikikh let)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1, pp. 3 - 4 (USSR)

ABSTRACT: In the USSR, the 40th anniversary of the October Revolution was celebrated in a period of gigantic political, economic, cultural, and scientific achievements. The Soviet chemists celebrated with the whole people. By the efforts of workers, technicians, engineers, and scientists the chemical industry boomed during the years of the Soviet regime and became one of the most important branches of national economy. The chemical industry was developed to only a small extent in Russia before the revolution, in spite of many excellent chemists working in Russia. Several branches of production of organic substances were lacking completely at that time. Only very few mineral chemical products were produced before the

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revolution. In 1957 the production level was increased by the 10 - 44-fold, compared to the time before the revolution. By the development of national economy according to the planning principles the Soviet government made possible the development of not only the mineral chemical industry, but also of all branches of chemical engineering. The establishment of an industry of high capacity for the exploitation of solid, liquid, and gaseous fuels (mineral oil-, natural gas-, coke-, and forest-technical industry) was one of the most important achievements of Soviet chemists. The vast development of chemical works was combined with the establishment of the industry for the manufacture of chemical apparatus. The successful solution of the problem of establishment of chemical and engineering works was favored by the existence of excellent chemists in the USSR who participated unreservedly in the revolution. Its close connection with manufacturing plants and an increasing development of scientific research activity is characteristic of the Soviet College of Chemistry and Technology. The author proudly points out that a series of

 chemical and technological discoveries of greatest importance

was made in the laboratories of these colleges. Although the staff of teachers of the colleges solved at the same time the problem of education of new experts, they carried out an entire series of theoretical and applied investigations. By this the industry was enabled to establish new works and to modernize the old ones. The government evaluated rightly the valuable experience of this scientific work and in the current year established a number of research laboratories. Beside the mentioned functions the colleges are a source of textbooks and manuals. This function of the colleges is now increased by the publication of several periodicals. The present periodical "Scientific Reports From Meetings of the College of Chemistry and Chemical Technology", published by the Moscow Institute of Chemical Technology imeni D.I. Mendeleyev (MKhTI imeni D.I.Mendeleyeva " Moskovskiy khimiko-tekhnologicheskiy institut) has to carry out important tasks.

SOV, 156-58-1-1/46

The Issue of Great Years

Card 4/4

SOV/156-58-3-52/52

AUTHORS: Torocheshnikov, N. S., Koval', Zh. A.

TITLE: The Experimental Investigation of the Turbulent Flow Effect in Tubes of Small Diameter (Eksperimental'noye issledovaniye vikhrevogo effekta v trubkakh malogo diametra)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp. 603-606 (USSR)

ABSTRACT: The authors carried out an investigation to determine the effect of the turbulent flow on some construction factors of tubes of small diameter. By means of the experimental results obtained the graphical representation of the cold current or the change of the cooling effect was determined. The following construction factors were taken into account:
1) The diameter of the end of the tube (1,2, 1,3, 1,5, 1,9, 2 mm) with a diameter of the diaphragm of 2,2 mm;
2) The diameter of the opening of the diaphragm (1, 1,5, 1,8, 2,2, 2,5, 3, 3,8 mm) at a diameter of the tube end of 1,5 mm;
3) The length of the hottest part of the tube (44,84, 144, 300 mm).

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SOV/156-58-3-52/52

The Experimental Investigation of the Turbulent Flow Effect in Tubes of Small Diameter

The dependence of the temperature of the cool current on the diameter of the end of the tube at P = 8 atm. excess pressure, $t_o = 23^o$, d = 2,2 mm, as well as the dependence of the temperature of the cool current on the diameter of the diaphragm were determined. In tubes with a small diameter the maximum cooling effect occurs at a ratio of $d_T : d_D : d_C$ = = 4 : 2 : 1, and the lowest temperature is reached at a ratio of 4 : 1,5 : 1. In the case of a decrease of the ratio $L : D_T < 50$ a decrease in the cooling effect occurs. In the case of an increase of the air pressure (higher than 6 atm. excess pressure) a slowing down in the increase of the cooling effect occurs. The investigations carried out for the separation of the gases by the turbulent flow effect did not turn out to be successful. There are 4 figures and 6 references, 3 of which are Soviet.

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SOV/156-58-3-52/52

The Experimental Investigation of the Turbulent Flow Effect in Tubes of Small Diameter

ASSOCIATION: Kafedra tekhnologii svyazannogo azota i shchelochey Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleyeva
(Chair for the Technology of Nitrogen and Alkalies at the Moscow Chemical and Technological Institute imeni D. I. Mendeleyev)

SUBMITTED: September 25, 1957

USCOMM-DC-60,610

Card 3/3

AUTHOR: Torocheshnikov, N.S., Member of the Board 3-58-7-1/36

TITLE: To Perfect the Preparation of Personnel, Develop Scientific Research (Sovershenstvovat' podgotovku kadrov, razvivat' nauchnyye issledovaniya)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 7, pp 3-9 (USSR)

ABSTRACT: The decision of the plenary session of the Central Committee of the Communist Party in May 1958 (to accelerate the development of the chemical industry and the production of synthetic materials) has changed the duties of the scientific staff of higher schools in the training of specialists for this industry. The whole program must be revised, modernized,and training methods must be radically changed. Scientific research work must be put on a broader base. The author lists the achievements of various schools in this field. At the Leningradskiy tekhnologicheskiy institut imeni Lensoveta (Leningrad Technological Institute imeni Lensovet), Professor B.V. Byzov and Academician S.V. Lebedev initiated research in the field of the synthesis of high molecular compounds. At present, under the leadership of the Member-Correspondent of the AS of the USSR, S.N Ushakov, a technological study of polyvinyl alcohol is underway. At the Moskovskiy khimiko-tekhnologicheskiy

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To Perfect the Preparation of Personnel, Develop Scientific Research

institut imeni D.I. Mendeleyeva (The Chemical-Technological Institute imeni D.I. Mendeleyev) important research is being conducted in the field of polymers, under the leadership of Academician P.P. Shorygin and Professor G.S. Petrov. A group of scientists under the leadership of Professor I.P. Losev is conducting research on the synthesis of "polyetherurethan" porous plastics, used as heat and sound insulators in various branches of industry. This Institute also produced synthetic ion-exchange resins used for water purification, extraction of precious and rare metals from solutions and sewage waters, desalinization of sea water and purification of antibiotics. At the Moskovskiy Institut tonkoy khimicheskoy tekhnologii imeni Lomonosova (The Moscow Institute of Fine Chemical Technology imeni Lomonosov), Academician S.S. Medvedev is conducting research on the theoretical basis of the process of emulsion polymerization. Under the leadership of Professors S.S. Voyutskiy and B.A. Dogadkin, the physical and chemical features of natural and synthetic latex, and a theory of film-formation and cloth impregnation by latexes are being studied. Important research into the mechanical and optical features of high polymers is being conducted. Professor N.A.

To Perfect the Preparation of Personnel, Develop Scientific Research

Preobrazhenskiy has created a series of physiologically active polymers. New monomers for the production of polymers from oil-chemical raw materials have been synthesized in the Yaroslavl' Technological Institute under Professor M.I. Farberov. Methyl-vinyl-pyridine rubber, which can be used for tire production, was also developed here. Under Dotsent M.M. Makarov, a new method of uninterrupted vulcanization of rubber gaskets and other rubber products was developed. The Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Chemical Mashine-Building Institute) is conducting research under Professor S.I.Sokolov, on the properties of products of copolymerization and copolycondensation of materials optically sensible to any deformation, highly durable dielectrics and adhesives. The technology and uninterrupted production of urea-aldehyde and phenol-aldehyde resins, of the polystyrene and its copolymers was developed under Professor A.N. Levin. Synthetic fibers "ftorlon" and "saniv" have been produced at the Moskovskiy tekstil'nyy institut (Moscow Textile Institute) under the leadership of Professor Z.A. Rogovin. Synthetic polypropylene fiber (a product of the polymerization of propylene) has also been produced. Important phosphor-organic

To Perfect the Preparation of Personnel, Develop Scientific Research

compounds were synthesized at the Kazanskiy khimiko-tekhnologicheskiy institut (The Kazan' Chemical-Technological Institute) under Academician A.Ye. Arbuzov. Dotsent Ye.S. Roskin of the Leningrad Textile Institute produced "nitron" - a fiber widely used in the textile industry. The Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy Industry) produced (under Professor A.A. Berlin) food protecting films. Many universities of the Union are also engaged in important chemical researches: in Moscow - under the leadership of Academicians A.N. Nesmeyanov and V.P. Kargin, and Professors K.V. Topchiyeva and N.M. Emanuel'; in Leningrad - Professors V.N. Dolgov, A.F. Dobryanskiy; in Gor'kiy - Professor G.A. Razuvayev, and in Kazan' - Academician B.A. Arbuzov. During 1958-1960 many new research laboratories will be created in other vuzes.

ASSOCIATION: Ministerstvo vysshego obrazovaniya SSSR (The Ministry of Higher Education of the USSR)

57-28-6-17/34

AUTHORS: Torocheshnikov, N. S., Leytes, I. L., Brodyanskiy, V. M.

TITLE: Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube (Issledovaniye effekta temperaturnogo razdeleniya vozdukha v pryamotochnoy vikhrevoy trube)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6, pp. 1229 - 1236 (USSR)

ABSTRACT: The effect produced by a turbulent temperature subdivision of gases, which was discovered by Ranque (Reference 1), usually takes place in the counterflow turbulence tube (figure 1a). The effect of the turbulent subdivision of gases caused considerable interest among research workers, both on account of its apparently paradoxical character and because of the possibility of applying it in refrigeration technology. Cooling of the gas in the turbulence tube is considerably more intense than in the case of the chocking effect of the flow. In the course of the present work the effect produced by the direct-flow turbulence tube was studied, and, at the same time, the hypothesis

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Investigation of the Effect of the Temperature Subdivision of Air in the Direct-Flow Turbulence Tube

57-28-6-17/34

of turbulence variation was checked. In the course of experiments carried out with a direct-flow tube the dependence of the cooling effect on the point where the cold fraction is taken off along the length of the tube, was carefully studied. Also the influence exercised by the cold-air portion upon the process of temperature-subdivision was investigated. The results obtained in no way differ qualitatively from the indices of the counterflow tube, which change according to the same dependences. Although the experiments were carried out under the same conditions, it nevertheless remained unexplained by what the decrease of efficacy in the direct-flow tube as compared with that in the counterflow tube was caused. It turned out that the direct-flow tube is, in principle, of unfavorable construction. As is shown (figure 4) the efficacy of the direct-flow construction is greater in the case of an increase of from 1 to ~~3~~ 4 than that of the counterflow tube, conditions otherwise being the same. The results obtained by these two types of tubes are shown (table 2). Constructional inter-

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relations must be found experimentally for each type of tube. The same is the case also with the interrelation of air consumption. The authors also calculated the thermodynamical efficacy of counterflow turbulence tubes for different μ. All existing hypotheses concerning the nature of the turbulence effect agree that its amount depends basically upon the velocity with which the gas is discharged from the ejector nozzle into the tube. Higher pressure before the nozzle leads to a certain increase of the velocity with which the gas is discharged from the nozzle. Nevertheless the increase of velocity in the supersonic range is not proportional to pressure but it lags behind. Therefore, if pressure increases, the greater part of the gas pressure is dealt with during the throttling process without causing a corresponding acceleration of the gas current. The authors thank N. I. Stolyarov for his aid in constructing and producing the experimental plant. There are 5 figures, 2 tables and 12 references, 7 of which are Soviet.

Investigation of the Effect of the Temperature Subdivi- 57-28-6-17/34
sion of Air in the Direct-Flow Turbulence Tube

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut (Moscow Chemical-Technological Institute)

SUBMITTED: July 1, 1957

1. Turbulent flow—Theory 2. Gases—Testing equipment
3. Gases—Pressure 4. Gases—Temperature factors

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SOV/66-59-4-2/28

15(6,8)

AUTHOR: Torocheshnikov, N.

TITLE: Chemistry in the Service of Refrigeration Engineering

PERIODICAL: Kholodil'naya tekhnika, 1959, Nr 4, pp 6-9 (USSR)

ABSTRACT: Chemical products are extensively employed in refrigeration engineering and can be considered under the following aspects: 1.) As constructional, protective and insulating material, such as plastics, also reinforced plastics and special kinds of rubber, all of which should be utilized to the fullest extent. Mentioned are also special brands of glue, so called "carbinol glue" (first synthesis of which was made by I.N. Nazarov, Academician) and epoxide glue (on the basis of reaction, discovered by V.A. Prilezhayev). 2.) As refrigerants and auxiliary substances for refrigeration processes; it should be remembered that 4/5 of all refrigeration installations are still operating on ammonia. The chemical industry is working on new kinds of refrigerants. 3.) As sources for creating new refrigerating processes, such as thermoelectric refrigerators utilizing the effect of Pelletier (Soviet spelling Pel'tye), or installations employing paramagnetic materials. 4.) As packing material, such as films made from polyethylene. In the USSR there are at present being de-

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Chemistry on the Service of Refrigeration Engineering SOV/66-59-4-2/28

veloped compounds based on polyisobuthylene-paraffin mixtures. 5.) As preservatives for food, such as antibiotics and antifungals. The article recommends close cooperation between the chemical and the refrigeration industries.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva(Moscow Chemical-Technological Institute im. D.I. Mendeleyev.)

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77281
SOV/63-4-6-15/37

AUTHOR: Torocheshnikov, N. S. (Candidate of Technical Sciences)

TITLE: Economics of the Chemical Industry. Problems for Further Improvement in Preparation of Specialists for the Chemical Industry.

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 780-782 (USSR)

ABSTRACT: In a previous article (this journal, 1, 6, 706 (1956)), an analysis was made of higher technical education in the USSR and abroad. In this article a review is presented of the improvements in chemical and technical education, as planned at meetings held by top government organs of the USSR. In the next seven years Soviet institutes of higher learning plan to graduate over 70,000 specialists for the chemical industry, chemical equipment construction, and automation of technological processes. It is necessary to train technicians familiar with the polymer industry, physico-chemical engineers familiar with the application

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Economics of the Chemical Industry. Problems for Further Improvement in Preparation of Specialists for the Chemical Industry

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of atomic energy to chemical and petroleum refining processes, mechanical, construction, and research engineers, and other specialists. An improved classroom program is needed, better related to actual industrial practices. It is strongly recommended that more on-the-job training and field work be assigned, yet such should not affect the expansion of the classroom curriculum scheduled to meet the current increasing requirements. In some universities, very little work at present is done on any major engineering projects. This is attributed, with some exceptions, of course, to a lessening of interest by the chemistry faculty towards chemical engineering research. This article stresses the faculty's responsibility and also demands greater efforts in training of specialists and in pursuing theoretical development and research in the fields of chemistry and of chemical technology. There is one table; and 3 references, 2 Soviet, 1 U.S. The U.S. reference is: I. G. Tolpin, Chem. Eng. Progr., 54, 8, 70 (1958).

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77231
SOV/63-4-6-15/37

Economics of the Chemical Industry. Problems for Further Improvement in Preparation of Specialists for the Chemical Industry

Distribution of hours in chemical-technical curricula.

SUBJECTS	HOURS AND TIME PERCENTAGES		
	1950	1955	1959
1. Social Sciences and Humanities.... (soc. sciences, foreign languages, etc.)	588 15,7	624 14,0	774 16,1
2. Physical-mathematical sciences..... (math., mechanics, physics)	436 11,6	660 14,9	761 15,8
3. Chemical sciences	995 26,5	1110 25,1	1250 26,0
4. Engineering disciplines..... among them:	740 19,7	1296 29,2	1281 26,6

(table cont'd on next card)

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Economics of the Chemical Industry. Problems for Further Improvement in Preparation of Specialists for the Chemical Industry

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SUBJECTS	HOURS AND TIME PERCENTAGES		
	1930	1955	1959
(a) Chemical engineering (proc. and inst. of chem. technology, automation of technological processes, general chem. technology, etc.)	260 6,9	432 10,2	485 10,1
(b) Mechanical engineering (strength of mat., machine details, thermotechnology)	480 12,8	814 19,1	796 16,5
5. Special disciplines	876 23,3	600 13,5	605 12,6
6. Physical education	120 3,2	135 3,0	140 2,9
Total hours	3755	4126	4810
(In %)	100,0	100,0	100,0

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S/064/59/000/08/03/021
B115/B017

AUTHORS: Torocheshnikov, N. S., Daryusin, A. P.

TITLE: Production of Ethylene From Coke Gas

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 8, pp 658-665 (USSR)

ABSTRACT: In the present paper the most frequently applied methods for obtaining ethylene from coke gas, i.e., from the ethylene fraction obtained by fractionating coke gas by means of a direct separation and by direct extraction from the coke gas, are dealt with in detail. The average composition of the coke gas from three coal basins is given (Table 1). The separation of the coke gas by fractional condensation is based on the different condensation temperatures at a given pressure. The dependence of the vapor pressure of the main components in the coke gas on temperature (Fig 1) and the scheme of the apparatus used to separate the coke gas in a series of fractions (Fig 2) are given. The composition of the propylene fraction strongly fluctuates. Besides propylene it also contains butylene, isobutylene, benzene, toluene, acetylene, ethylene, ethane, methane, oxygen, hydrogen, etc. The composition of the ethylene fraction is more stable; it contains more than 20 components which can be divided into a series of groups according to their boiling points (Table 2). Among the authors who deal with

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the utilization of the ethylene fraction P. K. Sakmin (Ref 2) is mentioned. A method used to produce ethylene from the liquid ethylene fraction is described (Ref 1). This ethylene fraction is divided into various groups after the throttling by fractional evaporation. The composition of these groups is given (Table 2). For this purpose a heat exchanger for ethylene was redesigned. The phase mixture was separated in four separators. The distribution of the components in the fractions obtained in the distillation of the ethylene fraction in the experimental arrangement by means of four separators is mentioned (Fig 3). The changed composition of the resulting ethylene fraction as dependent on the condensation temperature is illustrated in figure 4, whereas the dependence of the ethylene yield on the operational conditions of the apparatus used to separate the coke gas is shown in figure 5. On the basis of the results obtained the ethylene yield is high only if low temperatures are used. The device used for this purpose is schematicllay shown in figure 6. The apparatus shown schematically in figure 7 is used for the purification of the ethylene obtained. To remove CO_2 a countercurrent evaporation is made. The change of the CO content in the condensate obtained from the countercurrent condenser as dependent on the temperature

in the distilling flask (Fig 8), the operational process in the rectifying column (Fig 9) and the change in the acetylene content of the distillate and the liquid residue as dependent on the condensation temperature in the dephlegmator of the rectifying column (Fig 10) are graphically represented. In the direct method of ethylene production from coke gas, fractional condensation, sublimation, and adsorption as well as hypersorption are used. The apparatus used in Cordee (Great Britain) (Fig 11) is schematically reproduced, and a diagram is given of the ethylene yield as dependent on the temperature in the regenerator (Fig 12). The material balance in the process which takes place in the apparatus described (Table 3), and the schemes for the production of ethylene from coke gas in an apparatus with regenerators at 8 atmospheres excess pressure (Fig 13) and 0.6 atmospheres excess pressure (Fig 14) are reproduced. The composition of the fractions obtained is also given (Table 4). Finally, the importance of hypersorption for the above-mentioned process is pointed out, and the investigations made at the MKhTI imeni D. I. Mendeleyev (MKhTI imeni D. I. Mendeleyev) and NIISS are mentioned (Ref 14). There are 14 figures, 4 tables, and 14 references, 6 of which are Soviet.

Production of Ethylene From Coke Gas

S/064/59/000/08/03/021
B115/B017

ASSOCIATION: MKhTI imeni D. I. Mendeleyeva (MKhTI imeni D. I. Mendeleyev), GIAP (GIAP)

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78214
SOV/80-33-3-15/47

5.5600

AUTHORS: Torocheshnikov, N. S., Semenova, V. A.

TITLE: Concerning the Chromatographic Analysis of Gaseous Mixtures Containing Hydrogen, Nitrogen, and Methane

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3, pp 597-602 (USSR)

ABSTRACT: H_2-, N_2-, and CH_4-containing gaseous mixtures used in the nitrogen industry are analyzed in USSR, using the time-consuming VTI apparatus. A quick and accurate chromatographic analysis devised by the authors reduced the time of analysis to 20 min and gave satisfactory results, in agreement with those obtained in the VTI apparatus. The chromatographic apparatus consists of a 200 cm spiral glass or metal tube filled with AG-2 or SKT type activated carbon. The mixture of the displaced gas and CO_2 went subsequently to a measuring

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Concerning the Chromatographic Analysis of Gaseous Mixtures Containing Hydrogen, Nitrogen, and Methane

burette where CO_2 was absorbed by NaOH solution, and the volume of the component gas was determined. The accuracy of the method was satisfactory for all gas mixtures containing more than 1% of a given component gas. There are 2 figures; 1 table; and 5 references, 1 German, 4 Soviet.

ASSOCIATION: D. I. Mendeleyev Moscow Chemical and Technological Institute (Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I. Mendeleyeva)

SUBMITTED: July 13, 1959

SIMULIN, Yu.N.; LACHINOV, S.S.; TOROCHESHNIKOV, N.S.; BARDIK, Z.N.; KLYACHKO-GURVICH, A.L.

Change in the specific activity of an iron catalyst for ammonia synthesis as dependent on the degree of reduction. Kin. i kat. 4 no.6:933 N-D '63. (MIRA 17:1)

1. Gosudarstvennyy institut azotnoy promyshlennosti.

TOROCHESHNIKOV, N.F.; SEMENOVA, V.A.; GERASIMOVA, G.A.

Selecting the conditions for the chromatographic analysis of gaseous mixture containing CO_2, C_nH_m, O_2, H_2, N_2, CO, CH_4, C_2H_6. Zhur.prikl.khim. 38 no.9:2057-2062 S '65. (MIRA 18:11)

L 27954-66 EWT(m)/EWP(j) RM

ACC NR: AP6017735 SOURCE CODE: UR/0064/65/000/011/0020/0023

AUTHOR: Iovi, A.; Torochesnikov, N. S.; Lyudkovskaya, M. A.; Klevke, V. A. 30 B

ORG: MIKhTI im. D. I. Mendeleyev; GIAP

TITLE: Preparation of urea based on carbon monoxide

SOURCE: Khimicheskaya promyshlennost', no. 11, 1965, 20-23

TOPIC TAGS: urea, ammonia, carbon dioxide, carbon monoxide, organic synthetic process

ABSTRACT: The synthesis of urea based on carbon monoxide has a number of advantages in comparison with its production from carbon dioxide and ammonia: considerably lower pressure (approximately 21 atm. instead of 200) and temperature (110° instead 200°C); higher yield of the product (98% instead of 50-60%) with a considerably lower excess of ammonia (40% instead of 100-200%) and higher degree of conversion to urea in a single pass (68.5% instead of 17-25%); possibility of using construction material of cheaper steels; use of gaseous ammonia.

The proposed method of obtaining urea from carbon monoxide not only expands the raw material base for its productions but also is economically advantageous. Orig. art. has: 4 figures and 1 table. [JPRS]

SUB CODE: 07/ SUBM DATE: none / ORIG REF: 005/ OTH REF 002

Card 1/1 BLG

UDC: 661.717.5.002.3:661.993

KEL'TSEV, N.V.; TITOVA, Yu.K.; TOROCHESHNIKOV, N.S.

Use of synthetic zeolites in the deep purification of liquefied gases. Trudy MKHTI no.47:61-68 '64. (MIRA 18:9)

TOROCHESHNIKOV, N.S.; KEL'TSEV, N.V.; SIDOROV, A.I.

Use of synthetic zeolites in the combined drying of and carbon dioxide removal from air under high pressure. Trudy MKHTI no.47: 68-74 '64. (MIRA 18:9)

SIMULIN, Yu.N.; TOROCHESHNIKOV, N.S.; LACHINOV, S.S.

Effect of gas mixture pressure in the process of reduction on the activity of the ammonia synthesis catalyst. Trudy MKHTI no.47:90-94 '64. (MIRA 18:9)

KEL'TSEV, N.V.; TOROCHESHNIKOV, N.S.; SHUMYATSKIY, Yu.I.

Using synthetic zeolites for separating lower olefinic hydrocarbons from lightly concentrated gases. Gaz. delo no.9:25-28 '65. (MIRA 18:9)

1. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva.

L 1596-66 EWT(m)/T

AM4048142 BOOK EXPLOITATION UR/

661.183: 66.071.7 33 B+1

Sokolov, Vasiliy Andreyevich; Torocheshnikov, Nikolay Semenovich; Kel'tsev, Nikolay Vladimirovich

Molecular sieves and their use (Molekulyarnyye sita i ikh primeneniye) Moscow, Izd-vo "Khimiya", 1964. 0155p. illus., biblio. 2,300 copies printed.

TOPIC TAGS: petrochemistry, chemical separation, hydrocarbon, analytic chemistry, molecular sieve, zeolite, crystal

PURPOSE AND COVERAGE: The book is a presentation both on the properties and application of molecular sieves in purification and separation of gaseous and liquid mixtures. The structures of natural and artifical zeolites used as molecular sieves are described. Included are also methods for their practical use in various branches of technology for drying, purification and separation of hydrocarbons. Research results on membranes and films made from some materials and used in capacity of molecular sieves are presented. The book is inteneded for engineers and technicians in oil, gas and petrochemical industry.

Card 1/2

L 1596-66
AM4048142

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Ch. II. Use of molecular sieves for drying and purification of gases and liquids - - 36
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Ch. IV. Use of zeolites in chemical synthesis - - 126
Ch. V. Use of molecular sieves in analytical chemistry - - 133
Ch. VI. Molecular sieves of membrane and film shape

SUBMITTED: 11Mar64

SUB CODE: NP, GC

OTHER: 069

NR REF SOV: 063

Card 2/2

IOVI, A.; TOROCHESHNIKOV, N.S.; LYUDKOVSKAYA, M.A.; KLEVKE, V.A.

Production of urea on the base of carbon monoxide. Khim. prom. 40 no.8:585-587 Ag '64. (MIRA 18:4)

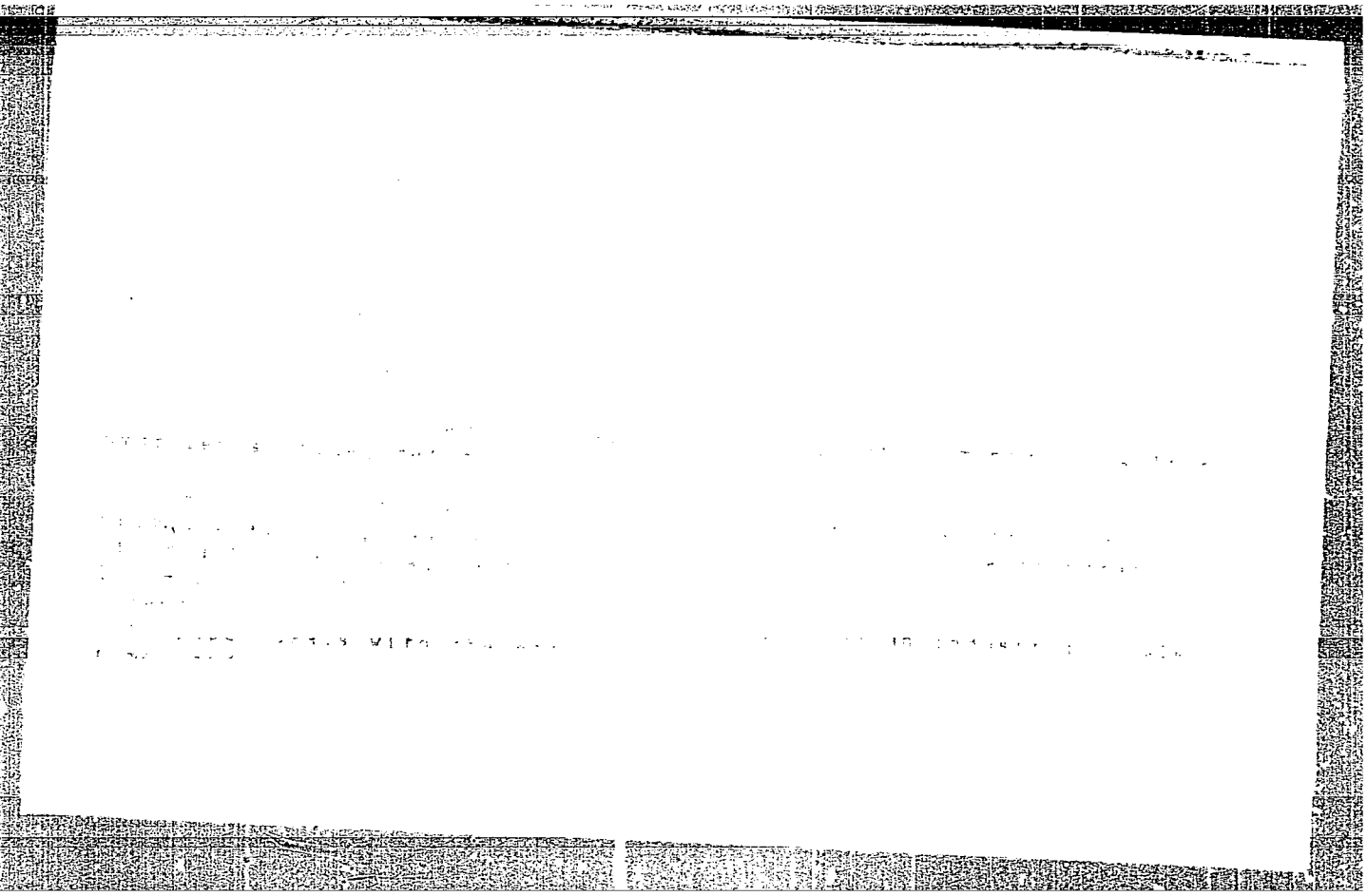
1. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva i Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza.

KEL'TSEV, N.V.; MYAKINENKOV, V.I.; TORCHESHNIKOV, N.S.

Use of fine-porous adsorbents for separating the acetylenic hydrocarbons. Khim. prom. 40 no.11:813-817 N '64
(MIRA 18:2)

KONYUKHOVA, I.N.; LACHINOV, S.S.; SIMULIN, Yu.N.; TOROCHESHNIKOV, N.S.

Distribution of promoters on the surface of the iron catalyst of ammonia synthesis as dependent on the degree of its regeneration. Trudy MKHTI no.44:155-158 '64. (MIRA 18:1)



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001756320015-1"

L 8402-65
ACCESSION NR: AP4043954

SUBMITTED: 00

Card 2/2

ACCESSION NR: AP4034713 S/0064/64/000/004/0244/0248

AUTHOR: Iovi, A; Torocheshnikov, N. S.; Lyudkovskaya, M. A.; Klevke, V. A.; Mukhina, A. I.

TITLE: Production of urea based on carbon monoxide

SOURCE: Khimicheskaya promy*shlennost', no. 4, 1964, 244-248

TOPIC TAGS: urea, production, process, carbon monoxide, sulfur, solubility, methanol, sulfur methanol system, urea methanol system, heat of solution, reaction mechanism

ABSTRACT: To obtain data for the production of urea from CO, NH_3 and S in methanol solvent, the solubility of sulfur and of urea in methanol was determined, and the effects of temperature and pressure on the reaction were investigated. Sulfur is only slightly soluble in methanol, < 0.5 gm/100 gm at 90C, still less soluble in methanol + H_2O, and only slightly more soluble in methanol + H_2S or methanol NH_3 (2 gm/100gm methanol + 11.5% NH_3 at 150C). The solubility of sulfur in methanol containing NH_3 + H_2S is sufficiently great (fig. 1, lines 4,5) to warrant using these methanol mixtures as solvents for the urea-forming reaction. The

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ACCESSION NR: AP4034713

solubility of urea in methanol is shown in fig. 2. The heats of solution of urea in methanol (5420 cal/mol) and of sulfur in methanol and in the various methanol, $H_2S + NH_3$ mixtures were calculated. The effect of temperature on urea yield was studied in a series of laboratory runs: reaction time, 1 hour; $S:NH_3:CO$ = 1:1.28:1.36. The reaction mechanism proposed by R. A. Franz, F. Applegath (J. Org. Chem., 26, No. 9, 3304 (1961)) was substantiated. The rapid pressure drop in the first 10 minutes of reaction was attributed to solution of CO and formation of urea and ammonium hydrosulfide; after reaction was established, the slight pressure rise was attributed to H_2S formation. The yield of urea increased as temperature increased from 90 to 120C, then progressively decreased at higher temperatures due to isocyanuric acid decomposition. Orig. art. has: 9 figures, 1 table and 6 equations.

ASSOCIATION: None

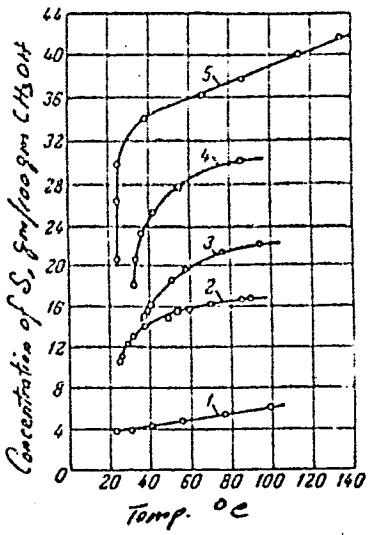
SUBMITTED: 00 ENCL: 02

SUB CODE: IC NO REF SOV: 008 OTHER: 010

Card 2/4

ACCESSION NR: AP4034713 ENCLOSURE: 01

Fig. 1. Solubility of sulfur in methanol containing ammonia and hydrogen sulfide:
1--11.5% NH_3 0.83% H_2S;
2--11.5% NH_3 2.5% H_2S;
3--21% NH_3 2.55% H_2S;
4--21% NH_3 3.5% H_2S;
5--21.5% NH_3 4.33% H_2S.



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ACCESSION NR: AP4034713

ENCLOSURE: 02

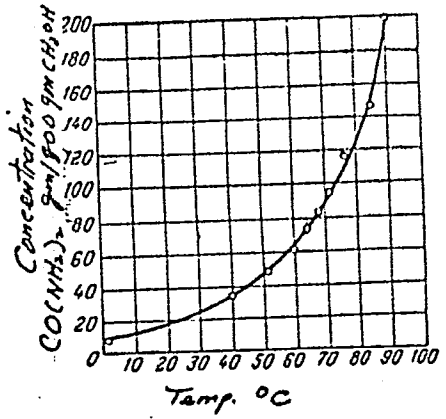

Fig. 2. Solubility of urea in methanol.

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ACCESSION NR: AP4034713 S/0064/64/000/004/0244/0248

AUTHOR: Iovi, A; Torocheshnikov, N. S.; Lyudkovskaya, M. A.; Klevke, V. A.; Mukhina, A. I.

TITLE: Production of urea based on carbon monoxide

SOURCE: Khimicheskaya promy*shlennost', no. 4, 1964, 244-248

TOPIC TAGS: urea, production, process, carbon monoxide, sulfur, solubility, methanol, sulfur methanol system, urea methanol system, heat of solution, reaction mechanism

ABSTRACT: To obtain data for the production of urea from CO, NH_3 and S in methanol solvent, the solubility of sulfur and of urea in methanol was determined, and the effects of temperature and pressure on the reaction were investigated. Sulfur is only slightly soluble in methanol, < 0.5 gm/100 gm at 90C, still less soluble in methanol + H_2O, and only slightly more soluble in methanol + H_2S or methanol NH_3 (2 gm/100gm methanol + 11.5% NH_3 at 150C). The solubility of sulfur in methanol containing NH_3 + H_2S is sufficiently great (fig. 1, lines 4,5) to warrant using these methanol mixtures as solvents for the urea-forming reaction. The

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ACCESSION NR: AP4034713

solubility of urea in methanol is shown in fig. 2. The heats of solution of urea in methanol (5420 cal/mol) and of sulfur in methanol and in the various methanol, $H_2S + NH_3$ mixtures were calculated. The effect of temperature on urea yield was studied in a series of laboratory runs: reaction time, 1 hour; $S:NH_3:CO$ = 1:1.28:1.36. The reaction mechanism proposed by R. A. Franz, F. Applegath (J. Org. Chem., 26, No. 9, 3304 (1961)) was substantiated. The rapid pressure drop in the first 10 minutes of reaction was attributed to solution of CO and formation of urea and ammonium hydrosulfide; after reaction was established, the slight pressure rise was attributed to H_2S formation. The yield of urea increased as temperature increased from 90 to 120C, then progressively decreased at higher temperatures due to isocyanuric acid decomposition. Orig. art. has: 9 figures, 1 table and 6 equations.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 02

SUB CODE: IC NO REF SOV: 008 OTHER: 010

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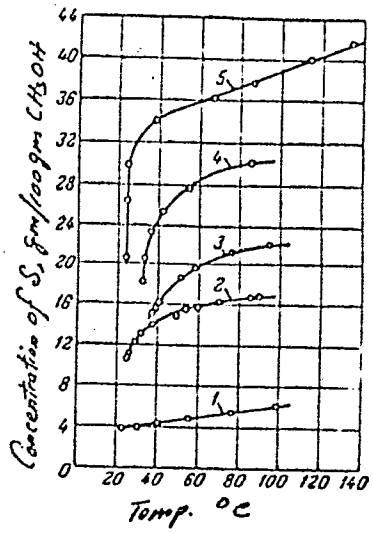
ACCESSION NR: AP4034713

ENCLOSURE: 01

Fig. 1. Solubility of sulfur in methanol containing ammonia and hydrogen sulfide:
1--11.5% NH_3 0.83% H_2S;
2--11.5% NH_3 2.5% H_2S;
3--21% NH_3 2.55% H_2S;
4--21% NH_3 3.5% H_2S;
5--21.5% NH_3 4.33% H_2S.



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ACCESSION NR: AP4034713 ENCLOSURE: 02

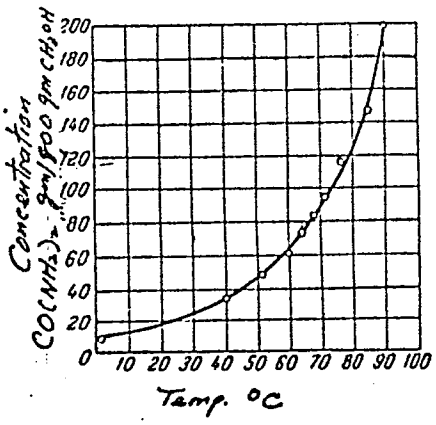

Fig. 2. Solubility of urea in methanol.

Card 4/4

SOKOLOV, Vasiliy Andreyevich; TOROCHESHNIKOV, Nikolay Semenovich; KEL'TSEV, Nikolay Vladimirovich; LEVINA, Ye.S., ved. red.

[Molecular screens and their application] Molekuliarnye sita i ikh primenenie. Moskva, Izd-vo "Khimiia," 1964. 155 p. (MIRA 17:7)

YEVSIN, Aleksandr Dmitriyevich; TOROCHESHNIKOV, N.S., kand. tekhn. nauk, dots., nauchn. red.; KAZNINA, L.A., red.; CHERNYSHEVA, O.A., tekhn. red.

[Organization of scientific research work in chemistry in the German Federal Republic] Organizatsiia nauchno-issledovatel'skikh rabot v oblasti khimii v FRG. Moskva, Vses. in-t nauchn. i tekhn. informatsii, 1963. 83 p. (MIRA 16:10)

(Germany, West--Chemical research)

TOROCHESHNIKOV, N.S.

128

SOV/6246

PHASE I BOOK EXPLOITATION

Soveshchaniye po tseolitam. 1st, Leningrad, 1961.

Sinteticheskiye tseolity; polucheniye, issledovaniye i primeneniye (Synthetic Zeolites: Production, Investigation, and Use). Moscow, Izd-vo AN SSSR, 1962. 286 p. (Series: Its: Doklady)
Errata slip inserted. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk. Komisiya po tseolitam.

Resp. Eds.: M. M. Dubinin, Academician and V. V. Serpinskiy, Doctor of Chemical Sciences; Ed.: Ye. G. Zhukovskaya; Tech. Ed.: S. P. Golub'.

PURPOSE: This book is intended for scientists and engineers engaged in the production of synthetic zeolites (molecular sieves), and for chemists in general.

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Synthetic Zeolites: (Cont.) SOV/6246

COVERAGE: The book is a collection of reports presented at the First Conference on Zeolites, held in Leningrad 16 through 19 March 1961 at the Leningrad Technological Institute imeni Lensovet, and is purportedly the first monograph on this subject. The reports are grouped into 3 subject areas: 1) theoretical problems of adsorption on various types of zeolites and methods for their investigation, 2) the production of zeolites, and 3) application of zeolites. No personalities are mentioned. References follow individual articles.

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Pavlova, L. F. Adsorption From n-Hexane-Benzene Solutions With Synthetic Zeolite CaA 225

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Synthetic Zeolites: (Cont.)

Tonkonog, L. G., K. V. Chmutov. Separation of Mixtures of Ethyl and Methyl Alcohols on Synthetic Zeolites 230

Vol'f, M. B., and R. V. Alekseyeva. Application of Synthetic CaA Zeolites in Separating Hydrocarbon Mixtures 233

Mitrofanov, M. G., and Ya. V. Mirskiy. Separation of Petroleum Fractions on Synthetic Zeolites 236

Kel'tsev, N. V., A. F. Starovoytova, and N. S. Torocheshnikov. The Adsorption Method of Purifying Isopentane From Admixtures of n-Pentane 239

Vinogradova, V. S., and L. S. Kofman. Application of Synthetic Zeolites in Separating and Purifying Synthetic Rubber Monomers 245

Card [redacted]

4/5

2

Synthetic Zeolites: (Cont.) SOV/6246

Bark, S. Ye., N. V. Kel'tsev, I. P. Ogloblina, N. M. Sergeyeva, M. I. Skvortsova, and N. S. Torocheshnikov. The Application of Synthetic Zeolites as Molecular Sieves for Preparing Protective Atmospheres 276

AVAILABLE: Library of Congress

SUBJECT: Chemical Engineering

BN/fmr/jk
3/13/63

Card 5/5

TOROCHESHNIKOV, N.S.; KEL'TSEV, N.V.; MYAKINENKOV, V.I.

Adsorption of monovinylacetylene on zeolites. Zhur. VKHO 7 no.6:694-695 '62. (MIRA 15:12)

1. Moskovskiy khimiko-tekhnicheskiy institut imeni D.I. Mendeleyeva. (Butenyne) (Zeolites)

KEL'TSEV, N.V.; NAZAROV, B.G.; TOROCHESHNIKOV, N.S.

Advanced stage of drying of transformer oils by the adsorption method. Khim.i tekh.topl.i masel 7 no.4:21-24 Ap '62. (MIRA 15:4)

1. Moskovskiy Ordena Lenina khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva.
(Insulating oils) (Adsorption)

PLETNEV, I.D.; TITKOV, V.A.; VAYNTROB, S.S.; TOROCHESHNIKOVA, L.V.

New synthesis of dyes of the triazine series. Part 4: Dyes for synthetic fibers. Zhur. org. khim. 1 no.11:2019-2022 N '65. (MIRA 18:12)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley. Submitted December 26, 1964.

HUNGARY

TOROK, Attila, SOMOGYI, Istvan, of the Cerebral Research Institute of the Neuropathologic and Psychiatric Clinic, Medical University, Szeged; Director, University Professor Istvan HUSZAK (A Szegedi Orvostudomanyi Egyetem Ideg- es Elmekorvani Klinika Agykutato Intezete)

"'Frequency Reactometer' - New Method and Device for Measuring the Time for Response"

Budapest, Magyar Pszichologiai Szemle, Vol 19, No 4, 1962, pp 420-425

Abstract [Authors' English summary modified]: Authors expound the usual principles governing the measuring of the time for response and the demands which they have to meet in order to satisfy: (1) inertialess operation; (2) unequivocal determination of the time measured; (3) completeness as far as possible; (4) simplicity. Authors took duly into account above-said requirements when designing and assembling their new device, the frequency reactometer, in the laboratory of the Institute. The paper presents the description of the new device. Eighteen references including 11 Hungarian, 7 Western.

1/1

ZHUKOVA, Z.A.; KEL'TSEV, N.V.; OGLOBLINA, I.P.; TOROCHESHNIKOV, N.S.

Using new sorbents in the advanced-stage dehydration of gases. (MIRA 15:2)
Khim.prom. no.2:100-105 F '62.
(Gases—Drying)
(Adsorbents)

KEL'TSEV, N.V.; GLOBLINA, I.P.; [illegible], N.S.

Drying of gas by artificial zeolites. Trudy VNII no.35:14-[illegible]
(MIRA 14:10)

(Gas drying)
(Zeolites)

[illegible]ZHAROVA, Zh.A.; KELI'NSEV, N.V.; TOROCHESHNIKOV, N.S.

Problems of acetylene adsorption on zeolites and problems involved in its separation. Trudy MHTI no.35:158-161 (MIRA 14:10)
'61.

(Acetylene)
(Adsorption)

S/064/62/000/002/004/006
B101/B144

AUTHORS: Zhukova, Z. A., Kel'tsev, N. V., Ogloblina, I. P., Torocheshnikov, N. S.

TITLE: Use of new absorbents for intensive gas drying

PERIODICAL: Khimicheskaya promyshlennost', no. 2, 1962, 24-29

TEXT: Experiments with granulated 4A (4A) and 5A (5A) zeolites for air- and gas drying were conducted. At 20°C and 10 mm Hg, the absorptive power of these zeolite types amounted to 20.8 and 20.6 g/100 g respectively. Investigation of the adsorption isotherms of water vapor at 0-350°C showed: (1) Superiority of the zeolites compared with silica gel and aluminum oxide, (a) owing to greater moisture capacity; (b) owing to lower temperature dependence. Gases may therefore be dried by zeolites without cooling the adsorber. Experiments with an adsorber tube of 1.3 mm diameter, granulation of the zeolites 1-2 mm, depth of layer 62 cm, were conducted with air of known dew point. Results: (1) A dew point of -60 to -65°C was reached for a rate of gas flow of 1.15 l/cm^2.min and 0.4 l/cm^2.min in the adsorption layer. (2) Temperature increase from 30 to 80°C reduces

Card 1/2

Use of new absorbents for ...

the dynamic activity of the zeolites from 21 g/100 g to 16 g/100 g. A rate of 3 $l/cm^2 \cdot min$ is assumed to be permissible for industrial adsorbers. Experiments with natural gas from the Stavropol' deposit were also conducted at 50°C and 0.5 l/min. A dew point of -60°C was reached. Because of the selective H_2O vapor adsorption by zeolites the other gas components did not affect the adsorption. Even the heavy hydrocarbons do not penetrate the fine structure of the 4A zeolite pores, so that no coke formation sets in during regeneration. 200-350°C is the best regeneration temperature. For regeneration with cold gas, heating in direct flow is preferred: dew point for direct flow down to -80°C, for counter flow only -60 to -65°C. A mixture of 74.2% N_2, 5.7% CO, 6.5% H_2, 6.0% H_2O, and 7.6% CO_2 was also simultaneously dried and purified. H_2O was adsorbed most of all in the first zeolite layer and gradually displaced the CO_2 adsorbed in the following layers, which left the adsorber at a dew point below -45°C. At 12.8 g/cm^3 moisture, the dynamic activity of the zeolite amounted to 10 g/100 g related to CO_2, and 11.3 g/100 g related to moisture. There are 8 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: A. L. Kohl, F. C. Riesenfeld, Gas Purification, N. Y., 1960.

Card 2/2

S/065/62/000/004/003/004
E194/E184

AUTHORS: Kel'tsev, N.V., Nazarov, B.G., and Torocheshnikov, N.S.

TITLE: Thorough drying of transformer oil by adsorption

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.4, 1962, 21-24

TEXT: Transformer oil requires drying to obtain high electric strength, but existing methods of drying have various disadvantages. Accordingly, laboratory bench tests were made in which transformer oil was dried by passing over a column 200 mm long and 10 mm in diameter of NaA type artificial zeolites at rates of 0.002 and 0.005 m/sec which reduced the water content (measured by the Karl Fischer method) from about 600 to 24 - 30 parts per thousand [Abstractor's note: parts per million is surely intended] and raised the electric strength from 22 to 70 - 100 kV/cm. On the basis of these data the method is recommended for general use.
There are 5 figures and 2 tables.

ASSOCIATION: MKhTI imeni D.I. Mendeleyeva
(MKhTI imeni D.I. Mendeleyev)

Card 1/1

S/064/61/000/007/003/005
B124/B206

AUTHORS: Agafonov, A. V., Dubinin, M. M., Onusaytis, B. A., Torocheshnikov, N. S.

TITLE: Studies on production and application of new selective adsorbents - molecular sieves - in the USSR

PERIODICAL: Khimicheskaya promyshlennost', no. 7, 1961, 26 - 30

TEXT: The authors give a short summary of the main results of studies in the field of synthetic zeolites conducted in various scientific institutes in 1960 on the basis of the coordination plan of the Komissiya po tseolitam (Zeolite Commission). The Zeolite Commission under the chairmanship of Academician M. M. Dubinin was established at the Otdeleniye khimicheskikh nauk AN SSSR (Department of Chemical Sciences, AS USSR) in 1959, in order to coordinate studies in the field of synthesis and application of synthetic zeolites. Its activities comprised: 1) development of synthesis- and technological processes for synthetic zeolites; 2) investigation of structural properties and adsorption of synthetic and natural zeolites, and 3) study of the application of synthetic zeolites for the drying and separation of gases. Crystallization of zeolites and their ion exchange prop-

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Studies on production...

erties were investigated at the Institut fizicheskoy khimii AN USSR (Institute of Physical Chemistry, AS USSR) under the direction of I. Ye. Neymark, zeolites of the types CaA, KA, LiA, BeA etc having been produced (the authors use the designations NaA, CaA, NaX and CaX, approved by the above-mentioned Commission, instead of the customary designations 4A, 5A, 10X and 13X). One of the institutes of the chemical industry under the direction of G. I. Mikulin and V. Ya. Nikolenko investigated the technological conditions for the synthesis of zeolites, and one of the institutes of the petroleum industry under the direction of Ya. V. Mirskiy the conditions for the production of crystalline zeolites of the type NaA and CaA in the laboratory and pilot plant. Optimum conditions for the synthesis of zeolites of the types NaA and NaX, as well as the ion exchange for the production of the CaA and CaX zeolites were studied in the laboratory under the direction of M. S. Misin and L. M. Maksimova. The conditions for the synthesis of zeolites of the types A and X were studied at the institut neftyanoy promyshlennosti (Institute of the Petroleum Industry) under the direction of A. V. Agafonov, L. I. Piguzova and B. A. Lipkind, applying the process used by N. S. Kurnakov (Ref. 3: Izv. AN SSSR, 6, 1381, (1937)) for the production of Permutit. The use of aluminum sulfate and aluminum oxy-

Studies on production...

chloride in the synthesis of zeolites was studied in a laboratory of the chemical industry under the direction of V. S. Vinogradova and L. S. Koffman. The institut khimii AN Gruz. SSR (Institute of Chemistry of the Georgian SSR) under the direction of G. V. Tsitsishvili dealt with the kinetics of the crystallization of the NaA zeolites, and the Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry, AS USSR) under the direction of S. P. Zhdanov with the optimum conditions for the production of Na zeolites by hydrothermal synthesis in the temperature range of from 70 to 200°C from strongly basic aluminum silica gels with a base excess of 300 - 500%. The studies by the laboratoriya GEOKhI AN SSSR (Laboratory of the GEOKhI, AS USSR) under the direction of N. I. Khitarov dealt with the drying of gases by means of the natural zeolites natrolite, desmine, thomsonite and limonite, while the use of the chemical-catalytical method for the production of natrolite granules was tried out at the IGI AN SSSR (IGI, AS USSR) under the direction of B. A. Onusavtis.
D. P. Dobychin elaborated a process for the production of porous glasses of the molecular sieve type yielding a molecular sieve with a porosity close to that of the CaA zeolite from the Na-7/23 (Na-7/23) glass, and one with a porosity similar to that of the NaX zeolite from the Na-10/30

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Studies on production...

(Na-10/30) glass. A number of investigations of the structure and adsorption of synthetic and natural zeolites was conducted at the Institute of Physical Chemistry, AS USSR under the direction of M. M. Dubinin. The distribution curves of the zeolite crystals were determined by the electron microscope investigation conducted by V. M. Luk'yanovich. D. P. Timofeyev studied the kinetics of steam adsorption, A. V. Kiselev the adsorption of nitrogen, benzene vapors and hexane on the molecular sieves NaA and CaX as well as the adsorption of benzene and n-hexane and their mixtures on the molecular sieve CaA. X-ray photographic investigations were made under the direction of N. A. Shishakov. Studies conducted under the direction of I. Ye. Neymark at the Institute of Physical Chemistry, AS USSR showed that the equilibrium adsorption on zeolites is well described by the potential theory, and that the thermal stability of zeolites drops in the sequence CaA>KA>NaA>NH_4A. The properties of Soviet and American molecular sieves during drying of gases were compared at the Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet) under the direction of T. G. Plachenov and G. M. Belotserkovskiy. Studies on the drying and purification of gases by means of molecular sieves were conducted at the Moskovskiy khimiko-

Card 4/5

Studies on production...

tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev) under the direction of N. S. Torocheshnikov and N. V. Kel'tsev, and by V. S. Vinogradova, L. S. Kofman and Ya. V. Mirskiy. In 1960 the Zeolite Commission held three meetings (in Moscow, Leningrad, and Groznyy) in the form of scientific colloquia with 120 - 150 participants. There are 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: R. M. Barrer, Brit. Chem. Eng., No. 5, 1 (1959) and US Patents 2882243, 2882244, 1959.

Card 5/5

S/063/60/005/006/014/014
A051/A026

AUTHORS: Torocheshnikov, N.S., Kel'tsev, N.V., Dzharylkanova, Zh.A.

TITLE: A New Adsorbent for Acytelene

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im. D.I. Mendeleyeva, 1960, No. 6, Vol. 5, pp. 710-712

TEXT: The authors conducted an investigation of acetylene separation from the gaseous mixture formed in the production of acetylene by the partial oxidation of methane from natural gas (Ref. 1-Laslo). They used the following solid sorbents for the purpose in question: activated carbon, silica gel and synthetic zeolites (molecular filters). A special study was made of the adsorption ability, with respect to acetylene, of the 4A and 5A type zeolites, having a pore size of 4 and 5 Å, by comparing them to the action of activated carbon. The A type synthetic zeolites are given as being alkaline aluminosilicate $MgO \cdot Al_2O_3 \cdot 2SiO_2 \cdot xH_2O$, where M is the cation, b- the valency of the cation, x- the number of H_2O molecules. The alumino-silicates, produced by precipitation in an aqueous solution, crystallize, and separate off from the mother liquor, are dried and calcined to remove the water. These granulated zeolites have pore sizes corresponding to the size of molecules of the

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substances being adsorbed, and are, therefore, suitable as molecular filters (Ref. 2-Barrer). The adsorption ability with respect to acetylene of other molecular filters and adsorbents was investigated in a vacuum containing quartzite scales, of the MacBain type (Ref 3-Brunauer). The test was conducted at pressures of 700 mm m.c. and -78, -17,20,50 and 80°C, and tests on activated carbon and MCM silica gel - at the same pressures and temperatures, excepting the -78°C. The experimental data are shown in Figs. 1 (5A) and 2 (4A), pointing to the greater advantage of the synthetic zeolites with respect to acetylene adsorption. The table lists the relative activity of the molecular filters in g/100 g of adsorbent, in % to the activity of the SKT carbon, (Table 1). The test results led the authors to recommend the molecular filters for separating acetylene out from not only gases of the oxygen oxidation of methane, but also from gases of air conversion. The experimental data were also processed with equations of the potential theory, changed by M.M. Dubinin, in order to describe the process of gas absorption and that of vapors (Ref. 4-Nikolayev). For gas it is given as: $\varepsilon = 2.3\ RT \lg \tau^2 \frac{P_{kp}}{P}$ cal/mol (1), $W = a_0 b$ cm^3/g (2). where ε is the adsorption potential, τ - corresponding

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temperature, ($\tau = \frac{T}{T_{Kp}}$), W- the volume of the space adsorbed, cm^3/g, a- the amount of acetylene adsorbed, g/100g of the adsorbent, b- the volume of the m-mol of compressed vapor, cm^3/m-mol. For vapor it is given as: $\epsilon = 2.3\ RT\ lg \frac{P_s}{P}$ cal/mol (3), $W = a \cdot v^* cm^3/g$ (4), where v^*, is the volume of the m-mol of liquid in the adsorbed state, in cm^3/m-mol, P_s - the pressure of the saturated vapor at the experiment temperature. Fig. 3 shows the results of the processing performed. The curve enables one to determine the extent of absorption of the acetylene under the given conditions. There are 3 graphs and 1 table, 4 references: 2 are Soviet, 2 English.

ASSOCIATION: Moskovskiy khimiko-technologicheskiy institut im. D.I. Mendeleyeva (The Moscow Institute of Chemical Technology im. D.I. Mendeleyev).

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Figure 1

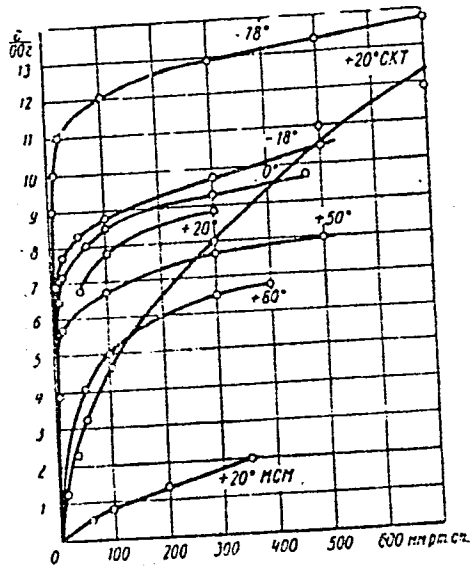

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Figure 2

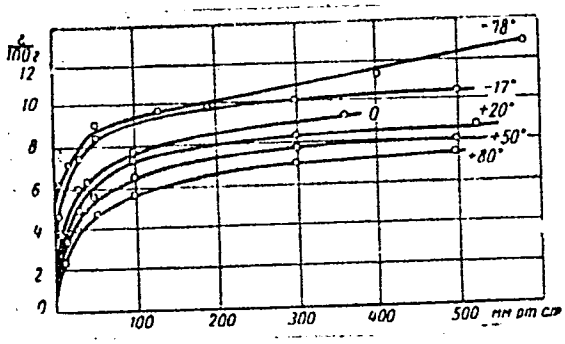

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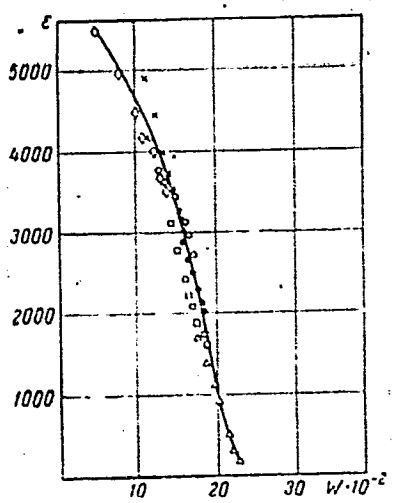
Figure 3



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Legend to Table 1:
Relative Adsorption Ability of Molecular Filters and Silica Gek with respect to acetylene, in % to the activity of SKT activated carbon

Adsorbent	Adsorbability in partial pressure of the acetylene 60 mm m.c.						Adsorbability in partial pressure of the acetylene 25 mm m.c.					
	-78°	-17°	0°	20°	50°	80°	-78°	-17°	0°	20°	50°	80°
Activated carbon SKT	100	100	100	100	100	100	100	100	100	100	100	100
Molecular filters 4A	--	131	126	181	342	685	--	173	170	280	480	1200
Molecular filters 5A	--	128	148	180	370	600	--	188	200	310	645	900
Silica gel MCM	--	25	20	19	23	43	--	20	17	15	33	66

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TOROCHESHNIKOV, N.S., kand.tekhnicheskikh nauk

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TOROCHESHNIKOV, N.S.; DARYUSIN, A.P.

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(Hydrogen--Analysis) (Nitrogen--Analysis)
(Methane--Analysis)

TOROCHESHNIKOV, N.S., otv.red.

[Symposium on the higher chemical and technical education] Simpozium po vysshemu khimicheskomu i tekhnologicheskomu obrazovaniiu. Moskva, Izd-vo Akad.nauk SSSR, 1959. 82 p. (Referaty dokladov i soobshchenii, no.18). (MIRA 13:7)

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(Technical education)

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21

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Using the BSSh-1 roller bit boring machine in apatite strip mines. Gor. zhur. no.8:37-39 Ag '64. (MIRA 17:10)

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Expand the transportation of petroleum products by fluvial methods. Rech. transp. 22 no.4:13-15 Ap '63. (MIRA 16:4)

1. Nachal'nik Glavnogo upravleniya po transportu i snabzheniyu neft'yu i nefteproduktami RSFSR.

(Petroleum products—Transportation)
(Inland water transportation)

14(0) SOV/92-58-12-21/24

AUTHOR: Torochkov, I.M., Chief of the Rosglavneftesnabsbyt Organization

TITLE: Bulk Plants Should Have Reinforced Concrete Storage Tanks (Neftebazam-zhelezobetonnyye rezervuary)

PERIODICAL: Neftyanik, 1958, Nr 12, pp 26-27 (USSR)

ABSTRACT: Referring to V.I. Titkov's article, published in the Nr 8 issue of Neftyanik, 1958 under the title "Introduction of Reinforced Concrete Storage Tanks in Oilfields", the author of the present article states that bulk plants of the Rosglavneftesnabsbyt Organization could use the underground reinforced concrete tanks with a capacity over 2000 m^3 for storing crude oil and various petroleum products. However, for storing light petroleum products and crudes it is advisable to use tanks of a special design (with floating pontoons, and spherocylindrical roofs) with a capacity under 2000 m^3. Reinforced concrete storage tanks have a number of advantages over usual steel tanks. Their introduction should be speeded up because they are more durable, and their construction does not require steel sheets which are in short supply. Furthermore, they lessen fire hazard and reduce losses of petroleum products caused by evaporation. At present a number of projects for constructing reinforced concrete tanks with a capacity ranging from 5,000 m^3 to 10,000 m^3 have been approved, and in some bulk plants their construction has started. Large-scale introduction of reinforced

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concrete storage tanks is hampered by the lack of a well developed method of building such tanks, and by the lack of construction experience. As a result, the erection of a reinforced concrete tank costs more and takes more time than the erection of a surface storage tank built of steel. In addition, there is no coating of a nonmetallic benzo-resistant material which could protect the inside surface of a reinforced concrete tank. The author recommends an intensive study of the problem of coating reinforced concrete tanks, and the development of an industrial method which could be used by special construction organizations for erecting storage tanks of the type under discussion.

ASSOCIATION: Rosglavneftesnabsbyt pri Gosplane RSFSR (The Rosglavneftesnabsbyt Organization at the RSFSR Gosplan)

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(Petroleum--Transportation)

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[Automatic filling of petroleum products tank trucks] Avtomaticheskii naliv nefteproduktov v avtomobil'nye tsisterny. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1960. 83 p. (MIRA 14:3)

(Tank trucks)

TOROCHKOV, I.M.; CHERNIKIN, V.I.; KELLER, A.A.; MATSKIN, L.A.

Transportation and storage of petroleum and petroleum products.
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TOROCHKOV, V. Yu.

"Use of a Loop Oscillograph to Study the Shutters of Aerial Cameras," by V. Yu. Torochkov, Tr. Mosk. in-ta inzh. geod. aerofotos'yemki i kartogr. 1955, (1956) Issue 22, pp 53-60 (from Referativnyy Zhurnal -- Astronomiya Geodeziya, No 11, Nov 56, Abstract No 6583, by L. A. Lukashevich)

"Familiar methods of exposure determination and of optical efficiency of shutters of cameras are compared. A brief description is given of the system of a device with a loop oscillograph used for determining the specified parameters of aerial camera shutters at MIIGAiK.

"On the basis of a comparison of the possibilities of oscillographs of various types, the conclusion is drawn that at exposures exceeding 1/500 sec it is advantageous to use the loop oscillograph, while for exposures below 1/500 the cathode oscillograph should be used. During the carrying out of experiments at MIIGAiK the following errors in the determination of parameters of aerial camera shutters were found: using the loop oscillograph, not above 1%; the cathode oscillograph, 3-4%; and with a photomechanical device for checking shutters (by projecting a light beam, intersected by the shutter, on a rotating drum with a light-sensitive film), 5-6%."

Sum 1239

TOROCHKOV, V.Yu., aspirant

Use of loop oscillographs in investigating shutters of aerial cameras. Trudy MIIGAIK no.22:53-60 '56. (MIRA 13:4)

1. Kafedra priborostroyeniya Moskovskogo instituta inzhenerov geodezii, aerofotos"yemki i kartografii.
(Shutter, Photographic--Testing) (Oscillography)